CLAIMS

What is claimed is:

1. A system for precisely controlling an amount of flatness or curvature of a lapping plate, the system comprising:

a rotatable platform;

a lapping plate mounted to the rotatable platform for rotation therewith;

a holder having a workpiece located between the holder and the lapping plate;

an abrasive slurry located between the lapping plate and the workpiece; and

means for controlling a temperature of the lapping plate and thereby precisely manipulating an amount of flatness or curvature of the lapping plate.

2. The system of claim 1, wherein a bimetallic effect is exploited to induce a linear expansion in the lapping plate so that the flatness or curvature of the lapping plate is manipulated with thermal cycling.

3. The system of claim 1, wherein the workpiece is a magnetic slider.

4. The system of claim 1, wherein the lapping plate can be configured in a flat, concave, or convex shape.

5. The system of claim 1, wherein the lapping plate gives the workpiece a high crown-to-camber ratio.

6. The system of claim 1, wherein the temperature of the lapping plate is adjusted during a charge process to selectively charge different areas of the lapping plate in a dictated order.

7. The system of claim 6, wherein a middle diameter portion of the lapping plate is charged first, and then an inner diameter portion of the lapping plate and/or an outer diameter portion of the lapping plate.

8. The system of claim 1, wherein a temperature of the workpiece and the abrasive slurry are controlled along with the temperature of the lapping plate.

9. The system of claim 1, wherein the lapping plate is formed from a plurality of layers of materials having different coefficients of linear expansion.

10. The system of claim 9, wherein the layers are formed from metal alloys.

11. The system of claim 10, wherein the layers comprise a tin-antimony alloy adjacent to the workpiece, and a steel alloy base.

12. The system of claim 1, wherein the lapping plate comprises a material with a linear expansion coefficient of 23-x-10^{-6}/°C bonded to another material with a linear expansion coefficient of 10-x-10^{-6}/°C.

13. The system of claim 1, wherein the lapping plate gives the workpiece a negative crown and positive camber values.

13. A lapping plate, comprising:

a base formed from a first metal alloy;

a second metal alloy formed on the base, the first and second metal alloys having different coefficients of linear expansion; and wherein

a bimetallic effect is exploited to induce a linear expansion in the lapping plate so that a flatness or curvature of the lapping plate is manipulated with thermal cycling.

14. The lapping plate of claim 13, wherein the lapping plate is configured in a flat, concave, or convex shape.

15. The lapping plate claim 13, wherein the first metal alloy is tin-antimony, and the second metal alloy is steel.

16. The system of claim 13, wherein the lapping plate comprises a material with a linear expansion coefficient of 23-x-10^{-6}/°C bonded to another material with a linear expansion coefficient of 10-x-10^{-6}/°C.